

### **REMARKS**

Responsive to the Office Action mailed August 8, 2006, Applicants provide the following. No claims have been amended, added or canceled herewith. Claims 16-31 were previously canceled without prejudice or disclaimer. Fifty (50) claims remain pending in the application: Claims 1-15 and 32-66. Reconsideration of claims 1-15 and 32-66 in view of the remarks below is respectfully requested.

Initially, Applicants acknowledge with great appreciation the Examiner's willingness to take part in the telephonic interview on November 16, 2006, as well as the Examiner's consideration of Applicants' position.

By way of this response, Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain any outstanding issues, it is respectfully requested that the Examiner telephone the undersigned at (858) 552-1311 so that such issues may be resolved as expeditiously as possible.

### **Summary of Applicant Initiated Examiner Interview**

1. Per 37 CFR § 133(b), the following is a brief summary of the Examiner interview conducted November 16, 2006 via telephone between Scott J. Menghini, Attorney of Record; Harvey Nickerson, representative of the Rain Bird Corporation; and Examiner Zoila Cabrera.

No exhibits or demonstrations were shown or conducted. Primarily, independent claim 1 was discussed. Claims 36, 38-41 and 44 were also discussed. The rejection of these claims in view of the Williams patent (US 5,956,248) and the Lonn patent (6,230,089) was discussed. No claim amendments were proposed. Since the Response to Arguments section of the present Office Action did not appear to address the arguments presented in the response of May 24, 2006, Applicants re-iterated the arguments advanced in the Response filed May 24, 2006 and requested clarification as to why it was felt that the arguments advanced were not successful as required by MPEP 707.07(f). It is Applicants position that it is not obvious to modify the expansion modules of the Williams patent to include a microcontroller as recited in the claims since there is insufficient motivation provided to do so and it would change the

principle of operation of the device of the Williams patent, which is prohibited by MPEP 2143.01. Additionally, Applicants pointed to other limitations that are clearly lacking in the Williams patent and the Lonn patent (even if combined, such as the control panel that is removably coupled to the base unit, and the base module of claim 1). Lastly, the added limitations of claim 1 and claim 44 (and also dependent claims 36 and 38-41), were discussed as clearly lacking from the Williams patent alone or in combination with the Lonn patent. No agreement was reached.

### **Response to Arguments**

2. Initially, Applicants note that the Response to Arguments section re-states the reasoning provided in the first Office Action and does not specifically address the arguments advanced in the response filed May 24, 2006. MPEP 707.07(f) states "[w]here the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it." Additionally, MPEP 707.07(f) states that in response to Applicants arguments, "[i]f it is the examiner's considered opinion that the asserted advantages are not sufficient to overcome the rejection(s) of record, he or she should state the reasons for his or her position in the record, preferably in the action following the assertion or argument relative to such advantages. By so doing the applicant will know that the asserted advantages have actually been considered by the examiner and, if appeal is taken, the Board of Patent Appeals and Interferences will also be advised."

Accordingly, Applicants respectfully request that if the present rejection is to be maintained in view of the arguments presented herein, that the substance of the arguments be addressed.

### **Claim Rejections - 35 U.S.C. §103**

3. Claims 1-3, 7-14 and 32-65 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 5,956,248 (Williams et al.) in view of U.S. Patent No. 6,230,089 (Lonn et al.).

With respect to claims 1-3, 7-14 and 32-65, including independent claims 1, 8, 32,

44, 49, 50, 51 and 60, Applicants agree that Williams does not disclose or suggest that the expansion module include a second microcontroller capable of communicating with the first microcontroller, such as variously recited in claims 1, 8, 32, 44, 49, 50, 51 and 60. However, Applicants disagree that it would be obvious to modify the Williams controller to include a microcontroller in the expansion module according to the teaching of Lonon to render these claims obvious.

No motivation to modify Williams with the teaching of Lonon

Applicants again traverse the rejection and respectfully submit that it would not be obvious to modify the station modules of Williams to include a microcontroller such as taught by Lonon. There is no motivation provided to do so. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. See MPEP 2143.01(I) and *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Moreover, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See MPEP 2143.01(I). Additionally, according to MPEP 2143.01(VI), if the proposed modification or combination of the prior art would *change the principle of operation of the prior art invention being modified*, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Similarly, according to MPEP 2143.01(V), if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

In this case, Williams teaches a simple irrigation controller 2 into which station modules 22 may be plugged. The station modules 22 provide additional outputs under control of the microprocessor of the controller. According to Williams, the invention comprises a housing having microprocessor means including a parallel output bus within the housing having a plurality of separate station output pins for controlling the irrigation stations with one station

output pin used for controlling each station (see col. 1, lines 41-54). Each module 22 has a plug connection for allowing the module 22 to be plugged into one set 40 of four output pins 42 on a parallel output bus in controller 2 (see col. 5, lines 29-32). In each set 40 of pins 42, one pin is assigned to control one of the terminals 24a and 24b, respectively, another pin is a ground connection, and the remaining pin is a 5V power input to module 22 (see col. 5, lines 32-35). Thus, when module 22 is in place and is plugged into the parallel output bus, controller 2 will activate the stations connected to module 22 as called for by the watering program being executed by controller 2 (see col. 5, lines 35-39). FIG. 9 clearly illustrates two separate inputs, each corresponding to a specific terminal 24a, 24b of the module 22. As shown in FIG. 8, a separate valve is connected to each terminal of the module. Each terminal is connected to its own transistor/TRIAC combination 70/72 (see col. 6, lines 32-33). When the controller 2 determines that a particular valve V should be opened, it does so by activating the appropriate transistor 70 to close the appropriate TRIAC 74 (see col. 6, lines 34-37). It is clear that all functionality to efficiently operate the controller 2 is provided, and no further functionality, in particular, within the station modules 22 is described or suggested. In other words, the operation of the station modules 22 is clearly supervised and controlled by the main microcontroller of the controller 2.

The *asserted* motivation for modifying the station modules of Williams to include a microprocessor such as provided in the ECUs of Lonn is provided on page 11, the first paragraph, and on page 13, the last paragraph of the Office Action, stating that:

it would provide a flexible control system wherein the primary and secondary controllers (or expansion modules) *share information to operate more efficiently*, the primary controller *does not necessarily dictate, control, or otherwise supervise the operation of the secondary controllers* (emphasis added).

Applicants submit that this motivation is insufficient. According to MPEP 2141.02(VI), a prior art reference must be considered in its entirety, i.e., as a whole, including those portions that teach away. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). In other words, the context

of the need for the microcontrollers of the secondary controllers of Lonon must be considered.

Lonon discloses a turf maintenance system that allows communications between a plurality of electronic control units (ECU's), each having a microcontroller (see processor 102 of FIG. 3 and 150a of FIG. 4). In the Background section, Lonon recognized that it would be desirable to be able to share information among various intelligent electronic processor devices on the turf maintenance vehicle (col. 2, lines 44-46) and that there is a need to develop a system where electronic controller devices on the turf maintenance vehicle are connected to a common bus...to exchange information (col. 2, lines 50-56). In other words, the invention of Lonon applies to a control system that seeks to allow controller devices that already have processors (i.e., microcontrollers) to be able to communicate with a master controller.

Each of the secondary controllers controls various functions and features (see col. 3, lines 19-21). For example, the controlled functions of the secondary ECUs include a cutting controller, ground speed controller and a hydraulic fluid detector. According to Lonon's invention, the controllers are each connected to a common bus network so that the primary controller can communicate (share information) with the secondary controllers (see col. 3, lines 4-5 and 23-25). Therefore, while the primary and secondary controllers share information to operate more efficiently, *the primary controller does not necessarily dictate, control, or otherwise supervise the operation of the secondary controllers* (see col. 3, lines 23-27, emphasis added). That is, prior to the invention of Lonon, the ECUs include microcontrollers, and the invention of Lonon provides a communication protocol to allow the primary and secondary ECUs to communicate. A microcontroller is needed in each secondary controller of Lonon, at least because of (1) the fact that each secondary controller controls its own functionality, (2) the differences in functionality with other secondary controllers, (3) the need to share information with the primary controller, and (4) the fact that the secondary controllers are not necessarily controlled or supervised by the primary controller.

It is asserted that the motivation to make the proposed modification to Williams is so that the primary controller (main microcontroller of the controller 2) and secondary controllers (station expansion modules 22) can *share information to operate more efficiently*. However, the station modules 22 of Williams are not "controllers" like the secondary ECUs of

Lonn and there is no need in Williams that the station modules 22 share any information with the controller 2. They do not control a specific function nor do they have any information that can be communicated to the main microcontroller of the controller 2. The station modules 22 are simply additional controller output connectors. Thus, the motivation to make the proposed modification is insufficient for at least this reason.

Additionally, it is asserted that the motivation to make the proposed modification is so that the primary controller (main microcontroller of the controller 2) *does not necessarily dictate, control, or otherwise supervise the operation of the secondary controllers (station expansion modules 22)*. However, in the Williams' controller 2, the main microcontroller does directly control the station modules 22. There is no suggestion that the controller 2 *not* dictate, control or supervise the station modules 22. The station modules are incapable of any control functionality independent of the main microcontroller. They function as simple switches to switch a voltage signal to a given valve. Thus, the motivation to make the proposed modification is insufficient for at least this additional reason.

Furthermore, according to MPEP 2143.01(VI), if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Applied to this rejection, the addition of a microcontroller for purposes of allowing the station modules and the controller 2 to share information and such that the controller 2 does not necessarily *dictate, control, or otherwise supervise* the station modules changes the principle of operation of the controller. That is, the principle of operation of the Williams controller is that the controller 2 stores and executes watering schedules for all valves V connected to the controller 2. In the execution of watering schedules, the controller 2 sends the appropriate control signals to the appropriate pin 42 of the appropriate module 11. Then, the electronics of the module 22 output a voltage signal to open a valve. Thus, the controller 2 directly controls and dictates the operation of the station modules 22 to provide additional controller outputs. The proposed modification would make it so that the station modules 22 would be capable of operation without control or supervision by the controller 2. Since the functionality of station modules 22 is to activate

valves connected to terminals 24 at the appropriate time and since the controller 2 stores and executes watering schedules, the station modules 22 *can not* operate without control by the controller 2. Thus, the proposed modification would completely change the principle of operation of the Williams controller. Therefore, for at least this reason, there is no motivation to support the proposed combination of Williams and Lonn.

Similarly, according to MPEP 2143.01(V), if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In this case, adding microcontrollers to the station modules 22 to share information and so that the controller 2 does not necessarily *dictate, control*, or otherwise *supervise* the station modules would render the controller unsatisfactory for its intended purpose. That is, the controller 2 is specifically configured such that the controller 2 is programmed with watering programs and controls and supervises the station modules 22 in order to implement the preprogrammed watering programs. If the controller 2 does not control or supervise the station modules, the controller 2 will not function as intended. Therefore, for at least this reason, there is no motivation to support the proposed combination of Williams and Lonn.

Thus, at least since no motivation is provided in Lonn or otherwise to suggest modifying the station modules 22 of Williams to include a microcontroller as the recited modules of claims 1, 8, 32, 44, 49, 50, 51 and 60, nor is any desirability of such modification provided, it is submitted that the proposed combination of Williams and Lonn does not render claims 1, 8, 32, 44, 49, 50, 51 and 60, and any claims dependent thereon, obvious. Furthermore, at least since the proposed modification would change the principle of operation of the Williams controller and would render the Williams controller unsatisfactory for its intended purpose, it is submitted that the proposed combination of Williams and Lonn does not render independent claims 1, 8, 32, 44, 49, 50, 51 and 60, and any claims dependent thereon, obvious. Therefore, for at least these reasons, it is submitted that the rejection of claims 1-3, 7-14 and 32-65 is overcome and should be withdrawn.

All limitations are not met

Additionally, as discussed in the telephone interview, neither Williams nor Lonn teach "a control panel removably mounted to a rear cabinet portion and a back plane circuit board mounted to the rear cabinet portion", as variously recited in at least claims 1, 8, 44, 49 and 66. Williams describes that the controller housing 4 is removably mounted to a mounting bracket 6, but this mounting bracket does not include a back plane circuit board. Also, neither Williams nor Lonn teach "a base module removably mounted in the rear cabinet portion that is electrically coupled to the back plane circuit board and includes drivers and output switches" as variously recited in at least claims 1, 8, 44, 49, and 66. On page 3 of the Office Action, it is noted that the base module reads on the panel 18; however, panel 18 is merely a plastic cover. This panel is not electrically coupled to a back plane circuit board and does not include drivers and output switches.

As noted in the telephone interview, the invention as variously recited in the claims is a combination of all of the recited elements. According to MPEP 2143.03, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) (emphasis added). Distilling an invention down to the "gist" or "thrust" of an invention disregards the requirement of analyzing the subject matter "as a whole." MPEP 2141.02(II), *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Thus, claims 1, 8, 44, 49 and 66, and any claims dependent thereon, are not rendered obvious by the proposed combination. Thus, it is respectfully submitted that at least for these reasons, the rejection is overcome and should be withdrawn.

New limitations of previous response

As briefly discussed in the telephone interview, in the previous response of May 24, 2006, Applicants variously amended independent claims 1, 8, 32, 51 and 66 in the interest of obtaining the timely issuance of subject matter in accordance with one embodiment of the



invention. For example, claim 1 was amended (claims 8, 32, 51 and 66 were similarly amended) to recite:

wherein the other of said plurality of discrete electrical output connector sets to which the expansion module is electrically coupled may be any one of said plurality of discrete electrical output connector sets capable of being coupled to a given expansion module independent of the electrical coupling of another expansion module to another of said plurality of discrete electrical output connector sets

These amendments do not represent a surrender of any subject matter. Applicants specifically preserve the right to present these claims in their originally filed form in a continuing application.

Applicants believe that none of the art of record teaches a controller in which any one expansion module can be connected to any one connector set independent of whether another expansion module is connected to another connector set. For example, in one embodiment, an expansion module may be inserted into any connector location in any order independent of the connection of any other expansion modules. In another example according to some embodiments, there is no serial connection of module connector sets such that the connection of a given expansion module depends on the connection of another serially connected expansion module in order to operate. In further embodiments, the controller is able to dynamically detect the presence or absence of an expansion module inserted in any location. Additional dependent claims were also previously added to further clarify this recited limitation, e.g., see dependent claims 36-38 and 52-54. The above noted limitations are not taught by the art of record and; therefore, it is respectfully submitted that all rejections presented herein are overcome at least for this reason and should be withdrawn.

Furthermore, in the previous response mailed May 24, 2006, Applicants variously amended independent claims 44, 49, 50, 60 and 66 in the interest of obtaining the timely issuance of subject matter in accordance with one embodiment of the invention. For example, claim 44 was amended (claims 49, 50, 60 and 66 were similarly amended) to recite:

wherein the expansion module may be electrically coupled and decoupled with said back plane circuit board through the other of said plurality of discrete electrical output connector sets without removing power to the control panel.

These amendments do not represent a surrender of any subject matter. Applicants specifically preserve the right to present these claims in their originally filed form in a continuing application.

Applicants believe that none of the art of record teaches a controller in which an expansion module can be coupled and decoupled with the back plane circuit board without removing power to the control panel. For example, in one embodiment, an expansion module may be hot-swappably inserted into any connector location without re-starting or re-booting the control panel. In further embodiments, the control panel is able to dynamically detect and configure an expansion module as it is inserted at a given connector set without re-starting or re-booting the control panel. In a further embodiment, the electrical connectors are provided such that the power circuit connection is established prior to a data circuit connection being established when a module is coupled to the controller; and where the power circuit connection is terminated after the data circuit connection when a module is removed from the controller. Additional dependent claims were also added to further clarify this recited limitation, e.g., see dependent claims 40-41, 45-46 and 55-58. The above noted limitations are not taught by the art of record and; therefore, it is respectfully submitted that all rejections presented herein are overcome at least for this reason and should be withdrawn.

4. Claims 4-6 and 15 and 66 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 5,956,248 (Williams et al.) and U.S. Patent No. 6,230,089 (Lonn et al.) in further view of U.S. Patent No. 5,602,728 (Madden et al.).

Claims 4-6 depend on claim 1, while claim 15 depends on claim 8. Claim 66 includes similar limitations as claims 1 and 8. It has been shown above that the proposed combination of Williams and Lonn does not render independent claims 1 and 8 obvious. Although Madden appears to disclose a microcontroller 115 in an expansion board 17, this

expansion microcontroller 115 is for communications with the main processor 52. Similar to Lonn, Madden provides no suggestion, or desirability to add such a microcontroller to the station modules of Williams, and such a change would change the principle of operation of the Williams controller and would render the Williams controller unsatisfactory for its intended purpose. Thus, Madden provides no additional teaching in combination with Williams and Lonn to render independent claims 1 and 8 obvious. Therefore, it is respectfully submitted that the rejection of dependent claims 4-6 and 15 is overcome and should be withdrawn.

### CONCLUSION

Applicants submit that the above remarks place the pending claims in a condition for allowance. Therefore, a Notice of Allowance is respectfully requested.

Respectfully submitted,

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